

many leaders of American labor, should be given every opportunity for proper expansion. Teachers in schools and universities have formed unions. From the experience of other countries we may find pressure on physicians also to unionize. Before we do this we should remember that we are not merely craftsmen; we occupy a position comparable rather to that of policemen, firemen or soldiers. Any such allegiance as those exhibited even by the most conservative unions would be wholly at variance with our duties, as understood at all times and in all places by physicians.

When we see, especially, the harm that can be done by unscrupulous, dishonest or overambitious representatives of unions—harm not only to innocent fellow citizens, but to trade unionism itself—we can draw a lesson regarding one danger. There are others. Trade unions too often consider wages the main thing, the quality and quantity of work quite secondary. One can see a danger from this tendency, which may last longer than either the capitalistic or the feudal systems, in the case of teachers' unions. Few teachers are paid enough, but many are paid more than they earn. In the agitation for increased appropriations, I have not seen any recognition of this fact, nor any intention of requiring a higher standard of performance when salaries are made fairly commensurate with comfort. The same danger would threaten if physicians had unions. How rarely in any unionized trade does one see pride in a neat job, or any effort to get it. The controller is keen to detect any detail that might be the sole function of another union, and fines a plasterer, for example, if he knocks in a protruding nail with the handle of his trowel; but both workman and helper may loaf to their heart's content without remonstrance. So let us keep out of unions as long as we can, and if we are forced into them as a result of social evolution, let us try to retain our pride in a good job and remember that ours is a calling in which there is work to do all the time; and time for our own comfort must often be negligible.

But there is already a class struggle going on, and as usual at such a time, it is all the more dangerous because declarations of war have either not been formally made, or if so, they have been concealed by those who fear to face the verdict of contemporaries or posterity. The coal strike is an example of a new method of trades union struggle. Incidentally, it illustrates the mental inertness of the people. As soon as the government took its stand even the most judicious newspapers assumed that the strike was over, though even now the coal situation grows more serious. One is reminded of the courtiers who assured King Canute that the waves receded at the royal command. It would have been better to imitate those, who, when hungry and unable to fill their stomachs, obliterate the void by tightening their belts.

PHYSICIANS AS SERVERS OF HUMANITY

What stand should physicians take in this war? Having the highest example, one can decide without trying to go into the merits of the case. I should say physicians should take the same stand they all took in 1914, and some even after that time, in international war. They should serve humanity wherever possible. But this, of course, is when they act as individuals, so that, to take a very concrete example, in case of a strike affecting the lives and health of the community, as of miners, railroad hands or dealers in food, they should apply the counterstrike, as members of cor-

porate bodies. If a hospital cannot get coal or food, then no one in the unions concerned should be admitted to the care of such a hospital. To do other than this would be a crime against the helpless, though the individual physician would be free to exercise his care wherever he could, and should help even those who call themselves his class enemies, when they are sick or wounded.

To do this may seem to require more charity than the twentieth century can afford. I do not think so. Let us hope, however, that instead of having to devote our talents to such work, we may soon enter another era, in which the only strife will be that for excellence. *Punch* not long since had a cartoon in which a great politician was posed as Hamlet, and quoting the bitter lines: "The time is out of joint;—O, cursed spite, that ever I was born to set it right!" This was a reflection of the soul of Hamlet, but other sentiments are more in keeping with the present time.

Class struggles of the most brutal kinds are not new. From time to time the so-called peasant wars sprang up as an expression of injustice, but the greatest insurrection before our time, the French Revolution, showed that after the main object was achieved communism and anarchy were not really profitable. Some centuries ago, the robber barons of Hohenzollern used to pillage their proletarian or bourgeois neighbors, and later successfully despoiled their neighbor princes, kings and emperors. No one now cares where they are. Their successful days seemed long and were in fact too long; but even if the present chaotic times last as long as the period of divine right of kings, it will be short as compared with biologic processes.

We have seen the dream of the Victorian poet realized in its most impossible part—we have seen the "airy navies grappling in the central blue." Why not hope that some other parts will be realized, that the war drums will throb no longer.

EFFECTS OF TYPHOID FEVER AND TYPHOID VACCINE ON PUL- MONARY TUBERCULOSIS *

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Many of the older physicians and writers viewed the coexistence of pulmonary tuberculosis and typhoid fever as offering a grave prognosis; and as there are undoubtedly a large number of physicians who at present have the same views, a report of our experience gained during an epidemic of typhoid fever at this institution during the months of August and September, 1919, should be of value. That the diseases may coexist has been recognized for a long time; and unquestionably, it not infrequently occurs in private practice, unknown in the majority of instances to the physician, as the patient may have a healed tuberculous lesion of which he is often unaware. It is well known that the symptoms of one disease may closely resemble those of the other, as miliary tuberculosis is often mistaken for typhoid fever, and as pulmonary tuberculosis may begin with symptoms that may simulate the features suggestive of typhoid fever.

* From the State Tuberculosis Sanatorium.

No doubt this complication has occurred in several sanatoriums; but the available literature reveals only one reported epidemic,¹ which took place in the summer of 1917 at Trudeau Sanatorium, Saranac Lake, N. Y. Altogether there were fifteen cases in that series, eleven of which were being treated for pulmonary tuberculosis. The disease proved fatal with two of the patients who had had active tuberculosis prior to the typhoid infection, while the third active case showed no more advancement of pulmonary lesion than otherwise would have occurred. Of the remaining eight, the general condition of three remained unchanged, while in five it was improved.

There were sixteen persons infected during the epidemic at this institution, nine of whom were patients, and two former patients, who were employed as storekeeper and orderly, a foreman of construction, three laborers and a maid. As five of these were outside employees and were nontuberculous, they shall not be considered in this report.

HISTORY OF EPIDEMIC

CASE 1.—Aug. 4, 1919, a patient, D. C. B., who for several weeks had had a low grade temperature, developed a higher temperature than usual.

CASE 2.—One day later, August 5, a patient, F. C. M., who a month before had had an exacerbation of symptoms, had a chill followed by high temperature. This and the preceding patient were at first thought to have developed an acute tuberculosis.

CASE 3.—On the same day, August 5, a patient, I. Q., who had had a previous malaise, also vomited and had a slight rise in temperature.

CASE 4.—August 9, a patient, H. W., had a severe chill, followed by a high temperature. He had a complication of pulmonary tuberculosis and bronchiectasis, and not infrequently, when the lungs did not drain properly, had chills followed by fever.

CASE 5.—One day later, August 10, a patient, J. N. T., vomited and had a high temperature.

CASE 6.—On the same day, August 10, a patient, L. L., had a rise of temperature following a malaise of several days' duration.

CASE 7.—Four days later, August 14, T. D. M., a hospital patient who was having a temperature range of from 97 to 100.4, developed a higher temperature.

CASE 8.—On the same day, August 14, the storekeeper, D. N. R., whose pulmonary lesion was quiescent, had a rise of temperature.

CASE 9.—At the same time, August 14, a patient, S. H. H., who had been having a temperature range between 97.6 and 99.4, developed a higher temperature.

CASE 10.—August 20, L. J. H., a patient, had a moderate rise of temperature.

CASE 11.—Six days later, August 26, R. I. V., an orderly, who had had no contact with the former patients, developed a high temperature.

SOURCE OF INFECTION

Immediately after tentative diagnosis of typhoid fever was made, samples of milk, drinking water, ice, and water from a nearby spring, from which some of the patients had been drinking, were examined to determine the source of infection.

The supply of ice was obtained from a factory, the milk from our own dairy, and drinking water from springs on the mountain side, which at that time were very low, and from the spring to which reference has

been made. This spring was located below and to the east of the hospital, and had been in use for several years. As two of the laborers who drank from the spring and not from the water supply in the buildings became ill of typhoid, the spring was at once suspected.

In the meantime the report of the bacteriologist was to the effect that all samples were in excellent condition except water from the spring, which showed the presence of *B. coli*.

This led to an investigation of our sewerage system. The main sewer was located to the south and across a ravine from the spring, but the sewer leading from the north wing of the hospital was located about 50 yards above and was supposed to be cemented and water tight. This part of the system was found to be almost completely obstructed and was opened with great difficulty, indicating that it had been in this condition for some time. On questioning those who had been drinking from this spring, we learned that a peculiar taste—that of creosote—had been noticed in the water for several days, and with one exception, all typhoid patients had been occasionally drinking this water. As we were using a creosote disinfectant in our lavatories in the hospital, it was sufficient proof that our sewage had contaminated the spring and that it was the source of our epidemic. As there were many changes made among the patients on the north wards of the hospital, we were unable to make a thorough investigation for the carrier.

REVIEW OF PATIENTS' PULMONARY TUBERCULOSIS AND TYPHOID FEVER

CASE 1.—D. C. B. (No. 1144), admitted May 8, 1919.

Tuberculosis.—Examination on admission: Chest: Marked dullness to fourth rib, both upper lobes, and to apex of base in back. Râles fairly active apex to base, and to lower angle of scapula back. Râles without cough. Condition far advanced. Sputum, positive. Diazo reaction negative. Temperature, from 98 to 99.4. Patient was substandard, and condition was slowly progressing at the time of the typhoid. Temperature, from 98 to 100. Sputum was positive prior to infection.

Typhoid.—Onset, August 4. Epistaxis. Widal test, positive. Diazo reaction, positive. Few rose spots. Delirium at intervals. Highest temperature, 105. On thirty-seventh day, relapse. Spleen palpable 2 inches below costal margin. Temperature returned to usual level on sixty-fourth day. Severe infection.

CASE 2.—F. C. M. (No. 1140), admitted, May 8, 1919.

Tuberculosis.—Examination on admission: Chest: Right, moderate dullness to fourth rib. Left, slight dullness, apex to third rib; thickened pleura with flatness left base. Right, râles on cough apex to fourth rib. Left, râles, apex to base without cough. Breath sounds very weak at left base. Condition far advanced. Sputum, positive. Diazo reaction, negative. Temperature, from 99.8 to 102.4. Patient was admitted to the hospital, where he remained until June 11. Transferred to cottage and continued to have occasional temperature from 99.2 to 99.4. Condition was slowly progressing at time of typhoid illness. Sputum persisted positive.

Typhoid.—Onset, August 5. Epistaxis. Two severe chills. Widal test, negative (only one examination). Diazo reaction, positive. Delirium at intervals for three days. Highest temperature, 104.4. Severe infection. On forty-eighth day, September 21, moved to his home. Temperature range at time of discharge, from 98 to 102. Two months later, in reply to inquiry, patient stated that his temperature had returned to the usual level and that other symptoms were practically the same as before typhoid.

CASE 3.—I. Q. (No. 1201), admitted, July 15, 1919.

Tuberculosis.—Examination on admission: Chest: Right, slight dullness at apex. Left, slight dullness to second rib.

1. Brown, Lawrason; Heise, F. H.; Petroff, S. A., and Wilson, G. E.: A Study of Effects of Typhoid and Antityphoid Immunization on Pulmonary Tuberculosis, *Am. Rev. Tuberc.* 11:717 (Feb.) 1919.

Left, râles on cough to second rib; expiration prolonged at both apexes. Condition, incipient. Sputum, negative. Diazo-reaction, negative. Temperature, normal. Patient had made slight improvement in general condition prior to typhoid infection. Sputum persisted negative.

Typhoid.—Onset, August 5. Severe vomiting. Widal test, positive. Diazo-reaction, positive. Highest temperature, 103.2. Temperature fell to normal on thirtieth day. Moderately severe infection.

CASE 4.—H. W. (No. 1113), admitted, April 1, 1919.

Tuberculosis.—Examination on admission: Chest: Right, marked dullness to fifth rib. Left, slight dullness at apex. Right, râles without cough, apex to base. Left, râles on cough, apex to base front, and to lower angle of scapula back. Condition, far advanced pulmonary tuberculosis and bronchiectasis. Sputum, negative. Diazo-reaction, negative. Temperature, normal. Patient had occasional exacerbations with chills and rise of temperature, but general condition had shown slight improvement at time of his typhoid illness. Sputum had persisted negative.

Typhoid.—Onset, August 9. Widal test, positive. Diazo-reaction, positive. During first three weeks of illness had nine pulmonary hemorrhages, averaging 2 ounces. Highest temperature, 104.4. Temperature returned to normal thirty-seventh day. Severe infection.

CASE 5.—J. N. T. (No. 1047), admitted June 6, 1913.

Tuberculosis.—Readmitted, Nov. 18, 1918. Examination on admission: Chest: Right, marked dullness to fourth rib. Left, slight dullness to second. Right, râles to fourth rib on cough and to lower border of scapula. Left, râles on cough to second rib. Condition, moderately advanced. Sputum, positive. Diazo-reaction, negative. Temperature, from 98 to 100. Patient was admitted to hospital, and after prolonged rest was moved to cottage. Discharged, June, 1916, as quiescent. November, 1918, was readmitted to hospital. Had severe hemoptysis. Improved and was moved to cottage in June, where he had onset of typhoid infection. Sputum persisted positive.

Typhoid.—Onset, August 10. Profuse epistaxis. Widal test, positive. Diazo-reaction, positive. Few rose spots. Spleen, palpable under costal margin. Had two attacks of hemoptysis, following which, both lungs became congested. Delirium for three days and at intervals for two more. Small amount of blood in involuntary stool on twentieth day. Highest temperature, 105. Temperature returned to normal on thirty-ninth day. Severe infection.

CASE 6.—L. L. (No. 1216), admitted, July 31, 1919.

Tuberculosis.—Examination on admission: Chest: Right, slight dullness to second rib. Left, slight dullness at apex. Right, râles on cough at second rib. Left, râles on cough at apex. Condition, incipient. Sputum, positive. Diazo-reaction, negative. Temperature, normal. Patient's general condition had slightly improved at time of typhoid illness. Sputum persisted positive.

Typhoid.—Onset, August 15. Widal test, positive. Diazo-reaction, positive. Palpable spleen. Delirium for twenty-four hours. Highest temperature, 105. Temperature returned to normal on thirty-fourth day. Severe infection.

CASE 7.—T. D. M. (No. 951), admitted, June 4, 1918.

Tuberculosis.—Examination on admission: Chest: Right, moderate dullness to third rib. Left, slight dullness at apex. Right, râles on cough to fourth rib and to lower third of scapula in back. Left, râles at apex. Condition moderately advanced. Sputum, positive. Diazo-reaction, negative. Temperature, normal. Patient had severe hemoptysis in September, 1918, followed by a marked extension of lesion with cavitation in right upper lobe, and since this exacerbation his pulmonary condition has been slowly progressing. Temperature, from 97 to 100.4, and sputum positive, prior to typhoid illness.

Typhoid.—Onset, August 14. Widal test, positive. Diazo-reaction, positive. Palpable spleen. Highest temperature, 103. Temperature down to usual level, thirty-ninth day. Moderately severe infection.

CASE 8.—D. N. R., admitted, Sept. 29, 1914.

Tuberculosis.—Examination on admission: Chest: Right, marked dullness to fourth rib. Left, slight dullness at apex. Right, râles apex to base front; apex to lower border of scapula back. Râles on cough. Left, râles on cough to third rib. Condition far advanced. Sputum, positive. Diazo-reaction, negative. Temperature, 100 plus. Patient improved and was discharged as quiescent, in June, 1916. Employed as store-keeper at time of typhoid fever. Sputum persisted as positive.

Typhoid.—Onset, August 14. Widal test, positive. Diazo-reaction, positive. Highest temperature, 102.4. Temperature fell to normal, thirtieth day. Mild infection.

CASE 9.—S. H. H. (No. 1072), admitted, Feb. 7, 1919.

Tuberculosis.—Examination on admission: Chest: Right, slight dullness at apex. Left, moderate dullness to third rib. Right, râles to second rib. Left, râles to fourth rib. Râles only on cough. Condition moderately advanced. Sputum, positive. Diazo-reaction, negative. Temperature, from 97 to 99. Patient's pulmonary condition had slightly progressed at time of typhoid fever. Sputum persisted positive. Temperature, from 97.6 to 99.4.

Typhoid.—Onset, August 14. Widal test, positive. Diazo-reaction, negative. Highest temperature, 101.4. Patient had typhoid fever in childhood. Temperature returned to normal on twenty-third day. Mild infection.

CASE 10.—L. J. H. (No. 1153), admitted, May 21, 1919.

Tuberculosis.—Examination on admission: Chest: Right, moderate dullness to third rib. Left, moderate dullness to third rib. Râles, apex to base both lungs and middle scapula back. Râles mostly without cough. Condition far advanced. Sputum, positive. Diazo-reaction, negative. Temperature, normal. Pulmonary condition had shown slight improvement, and general condition was very much improved before onset of typhoid fever. Sputum persisted positive.

Typhoid.—Onset, August 20. Widal test, positive. Diazo-reaction, positive. Before onset, patient was given one injection of typhoid vaccine. Highest temperature, 103. Temperature returned to normal on fifteenth day. Mild infection.

CASE 11.—R. I. V., admitted, April 9, 1917.

Tuberculosis.—Examination on admission: Chest: Right, slight dullness to third rib; moderate dullness at base, and râles on cough to fourth rib, without cough at base. Condition moderately advanced. Sputum, negative. Diazo-reaction, negative. Temperature, normal. Patient discharged in November, 1918, with case apparently arrested. Employed as orderly at time of typhoid illness.

Typhoid.—Onset, August 21. Widal test, positive. Diazo-reaction, positive. Two injections of typhoid vaccine had been given prior to illness. Highest temperature, 104.2. Temperature became normal, twenty-seventh day. Seven days later a rise to 100.2 was noted. Thrombosis of left femoral vein. Temperature returned to normal on fortieth day. Severe infection.

TREATMENT OF PATIENTS

General Measures.—The typhoid patients were removed to the hospital and placed in well ventilated and screened rooms, and when their condition permitted, the beds were pulled out into an open ward and were covered with gauze netting. It is hardly necessary to state that the patients were requested to change the position in bed sufficiently often to prevent the occurrence of congestion and the development of bed-sores.

Prophylaxis.—Strict measures were exercised in proper disinfection of dishes, bedclothing, sputum, urine and feces. All attendants were carefully instructed in the proper use of disinfectants.

Diet.—The high caloric feeding of Coleman was deemed advisable. In Table 1 an example is given of a day's menu with nourishments:

Substitutes of grape juice, baked potatoes, jello, bouillon, buttermilk and malted milk were given from

time to time. Four of the patients were so toxic for a few days that they were unable to take more than 1,500 calories in twenty-four hours; but as soon as possible they were increased to the daily average of 3,500.

Medicinal.—Five grains of salol were given every six hours. Ten drops of dilute hydrochloric acid were given three times a day after eating. Two drams each of aromatic cascara sagrada and glycerin were given every other night, alternating with a soapsuds enema.

Hydrotherapy.—A tepid sponge bath was given three times a day followed by an alcohol rub. A cold sponge was given only when there was manifestation of nervous symptoms or extremely high temperature.

Convalescence.—Protracted bed rest was deemed essential in all the cases. Those whose pulmonary condition was quiescent prior to illness were kept at rest two weeks before they were permitted to sit up, and those with active trouble were kept at rest for a week longer. During this period, calories were increased and solid food was given as soon as possible in the individual case.

THE EFFECT OF TYPHOID FEVER ON PULMONARY TUBERCULOSIS

The conclusion of the effects on pulmonary tuberculosis in our series of eleven cases was made two months following convalescence. Of this number, four were classed as active with abnormal temperature prior to the typhoid infection, and all were far advanced.

TABLE 1.—MENU FOR A DAY

BREAKFAST		Calories
Oatmeal gruel	5 oz.	167
Egg	1	80
Milk toast	1 slice (milk, 3 oz.)	164
Butter	10 gm.	75
Cream	2 oz.	120
Coffee		
Sugar (granulated)	5 gm.	60
NOURISHMENT, 10 A. M.		
Egg-nog	7 oz.	220
Total		886
DINNER		
Cream of potato soup	8 oz.	200
Milk toast	1 slice (milk, 3 oz.)	164
Custard	4 oz.	262
Milk	7 oz.	150
Coffee		
Sugar (granulated)	5 gm.	60
NOURISHMENT, 3 P. M.		
Lactose ice cream	4 oz.	390
Total		1,226
SUPPER		
Beef juice	6 oz.	46
Egg	1	80
Milk toast	1 slice (milk, 3 oz.)	164
Mashed potatoes	50 gm.	41
Cocoa	6 oz.	197
NOURISHMENT, 10 P. M.		
Lactose lemonade	6 oz.	360
NOURISHMENT, 1 A. M.		
Milk	7 oz.	150
NOURISHMENT, 4 A. M.		
Lactose orange albumin	6 oz.	390
Total		1,428
Total for 24 hours		3,540

Two of the four cases have continued to advance, and judging from a report received, the condition of the patient who had returned home has also advanced but in no case more rapidly than before the onset of typhoid. The remaining patient has shown a slight improvement in general condition.

Three of the total cases were classed as active without rise of temperature but with other symptoms, as cough, streaked sputum and pleurisy. Two of these patients have shown improvement in their general condition, while the condition of the other is unchanged.

Three of the remaining four cases were classed as quiescent, and the other as apparently arrested. Two of these patients have shown improvement in both pulmonary and general condition. One has shown improvement in general condition, while there is no appreciable change in the condition of the other.

With one exception, the patients were weighed as soon as they were able to be weighed, and it was found that eight had lost from 5 to 12 pounds and that one had actually gained 5 pounds, while the weight of the other remained the same.

EFFECTS OF TYPHOID VACCINE ON PULMONARY TUBERCULOSIS

In all, sixty-two patients were given three injections of typhobacterin. The initial dose consisted of 500 million bacilli, and the second and third 1,000 million

TABLE 2.—REACTION OF TUBERCULOUS PATIENTS TO TYPHOID VACCINE

	No Reaction		Mild Reaction		Moderate Reaction		Severe Reaction	
	No.	Per Cent.	No.	Per Cent.	No.	Per Cent.	No.	Per Cent.
Active	15	41	9	24	8	22	5	13
Inactive	13	52	8	32	4	16		
Total	28	45	17	27.5	12	19.5	5	8

each. The injections were given ten days apart, and the patients, who were on exercise, were requested to remain quiet for forty-eight hours. None were given vaccine if they were having abnormal temperature, or if there was a recent hemorrhage or streaked sputum. Of the total cases, nine were incipient, twenty-four moderately advanced, and twenty-nine far advanced. Of these, thirty-seven were classed as active, and twenty-five as inactive. A reaction was regarded as mild when there was a slight aching, malaise or pleurisy, or if the temperature did not exceed 100; as moderate when the temperature did not go above 101, and as severe when the temperature exceeded 101.

It is interesting to note that a higher percentage of the inactive cases gave a mild reaction than the active cases. As was expected, the active cases gave a higher percentage of moderate and severe reactions than the inactive. The results obtained in our series of sixty-two cases are given in Table 2.

SUMMARY AND CONCLUSIONS

1. The coexistence of these diseases should require a high caloric feeding.
2. Prolonged bed rest during convalescence is advisable as a precautionary measure.
3. Typhoid vaccine gave severe reactions only in the active cases, but with no permanent bad effects.
4. Patients with inactive pulmonary tuberculosis may have typhoid fever without any detrimental effects on the pulmonary condition, while the general condition may often be benefited.
5. Patients with active pulmonary tuberculosis may have typhoid fever and recover without a more rapid advance in the pulmonary condition than would have occurred had they not had typhoid.
6. Pulmonary tuberculosis did not have any appreciable effect on the course of typhoid fever.

Health First Means Safety First.—When all employers realize that medical inspection of employees is quite as important as regular inspection of the machinery itself, we can look hopefully for a great reduction in the amount of accidents.—*Minnesota Health J.*, Nov. 20, 1919.